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Claims

What is claimed is:

1. An improvement in a biosensor of the type for use in an apparatus for analyzing a biological liquid, the biosensor comprising:

5 a waveguide having at least one planar surface, said waveguide associated, in liquid tight attachment, with a first member, said first member, in conjunction with the waveguide, defining walls of reservoirs for containing the biological liquid while, a planar surface of the waveguide defines a floor of said reservoirs,
10 the floor being associated in part with capture molecules, the improvement comprising reservoir walls formed of an inert, opaque material.

15 2. The improvement of claim 1 wherein said inert, opaque material is metal.

3. The improvement of claim 1 wherein the entire first member is made of metal.

20 4. The improvement of claim 1 wherein said first member has ports for oscillating liquid into and out of a reservoir.

25 5. The improvement of claim 1, wherein the biosensor further comprises a gasket positioned to cushion the attachment of the first member to the waveguide.

6. The improvement of claim 5, wherein the gasket is a laminate of elastic material and a synthetic resin polymer material.

30 7. The improvement of claim 1 wherein the waveguide is made of an optical material selected from the group of optical materials consisting of plastic, quartz, and glass.

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582 8. The improvement of claim 8 wherein the waveguide is flat, and is associated with a rear lens for reading light passing through the waveguide to monitor coupling efficiency and beam quality.

5 9. The improvement of claim 1 wherein the biosensor further includes a second member, the waveguide being sandwiched between said first member and said second member.

10 10. The improvement of claim 9 wherein the biosensor further includes a registration plate.

15 11. The improvement of claim 10 placed in an assay apparatus wherein the biosensor further includes a third member, the third member having a means for connecting the biosensor to the assay apparatus.

12. The improvement of claim 7 wherein the waveguide is flat, and is associated with a grating for coupling light into the waveguide.

20 13. A waveguide comprising:
a front ramp with associated lens end for receiving light,
a rear ramp with associated lens for transmitting light out of said waveguide, and
a planar portion having first and second parallel planar surfaces for transmitting light from the front ramp to the rear ramp so as to transmit light received at the lens associated with the front ramp through the lens
25 associated with the rear ramp.

14. The waveguide of claim 13 wherein capture molecules are associated with the first planar surface of the planar portion.

30 583 15. The waveguide of claim 13 wherein the waveguide is made from an optical plastic, and the front ramp is angled away from the planar portion's plane at a mean angle of from about 15° to 32°.

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16. A biosensor of the type for use in an apparatus for analyzing a biological liquid, the biosensor comprising:

5 a waveguide having at least one planar surface and being optically associated with a rear lens oriented for reading light passing through the waveguide, to monitor coupling efficiency and beam quality, said waveguide further associated in liquid tight attachment with

10 a first member, said first member, in conjunction with the waveguide, defining metal walls of a plurality of reservoirs for containing the biological liquid while a planar surface of the waveguide defines a non-metal floor of said plurality of reservoirs, the floor being associated in part with capture molecules,

a gasket positioned to cushion the attachment of the first member to the waveguide, and

15 a second member, the waveguide being sandwiched between the first and second members.

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17. The biosensor of claim 16 wherein said first member has ports for infusing and draining liquid into and out of a reservoir.

20 18. A biosensor of the type for use in an apparatus for analyzing a biological liquid, the biosensor comprising:

a waveguide having at least one planar surface and being optically associated with a rear lens oriented for reading light passing through the waveguide, to monitor coupling efficiency and beam quality, said waveguide further associated in liquid tight attachment with

25 a first member, said first member, in conjunction with the waveguide, defining at least one reservoir for containing the biological liquid while a planar surface of the waveguide defines a floor or ceiling of said reservoir, the planar surface being associated in part with capture molecules, and

30 an inlet and outlet in fluid communication with said reservoir for infusing and draining said biological liquid into said reservoir so as to allow the biological liquid to contact said capture molecules.

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1. 16
19. An improvement in an apparatus for analyzing a biological liquid,
said apparatus being of the type having:

a light source;

a biosensor comprising:

5 a waveguide having at least one planar surface, and being
further associated in liquid tight attachment with

a first member, said first member, in conjunction with the
waveguide, defining at least one reservoir for containing the
biological liquid, the planar surface being associated in part with
10 capture molecules, and

an inlet and outlet in fluid communication with said reservoir
for infusing and draining said biological liquid into and out of said
reservoir so as to allow the biological liquid to contact said capture
molecules; and

15 a light detector for detecting light emitted through said planar surface;
the improvement comprising orienting said biosensor in such a way that the
planar surface is generally horizontal and level with a surface upon which the
apparatus sits and so that the planar surface forms a ceiling to said reservoir.

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